CAMBRIA

October 12, 2000

Ms. Eva Chu
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

Re: LETTER OF TRANSMITTAL
Third Quarter 2000 Groundwater Monitoring Report
And Case Closure Request
Clark's Home and Garden
23040 Clawiter Road
Hayward, California

Dear Ms. Chu:

Cambria Environmental Technology, Inc. has enclosed the *Third Quarter 2000 Groundwater Monitoring Report and Case Closure Request* for the above-referenced site.

If you have any questions, please do not hesitate to call me at (510) 420-3340.

Sincerely,
Cambria Environmental Technology, Inc.

John A. Riggi
Project Geologist

JRiggi@cambria-env.com

Enclosure

cc: Mr. Ken Clark, 23040 Clawiter Road, Hayward, California 95118-3686
Mr. and Mrs. Bob and Shirley Price, 537 Hidden Valley Road, Grants Pass, Oregon 97527

\\SERVER\R\Clarks H&G\QM\QMRTransmittal Letter.doc

Oakland, CA
San Ramon, CA
Sonoma, CA
Portland, OR

Cambria Environmental Technology, Inc.

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

CAMBRIA

October 11, 2000

Mr. Kenneth D. Clark
Clark's Home and Garden
23040 Clawiter Road
Hayward, California 95118-3686

Re: **Third Quarter 2000 Groundwater Monitoring Report and Case Closure Request**
Clark's Home and Garden
23040 Clawiter Road
Hayward, California
Cambria Project # 189-1517

Dear Mr. Clark:

As required by the Alameda County Health Care Services Agency (ACHCSA), Cambria Environmental Technology, Inc. (Cambria) has prepared this quarterly monitoring report and case closure request for the above-referenced site (Figure 1). The third quarter 2000 activities and results, hydrocarbon distribution in groundwater, bioremediation evaluation, a request for case closure, and anticipated future activities are presented below.

THIRD QUARTER 2000 ACTIVITIES AND RESULTS

Field Activities: On July 21, 2000, Cambria gauged and collected groundwater samples from wells MW-1, MW-2, and MW-3 (Figure 2). Cambria recorded dissolved oxygen (DO) and ferrous iron concentrations, and measured oxidation-reduction potential (ORP) during field activities. Monitoring data is summarized on Tables 1 and 2. Field data sheets are presented as Attachment A.

Sample Analyses: Groundwater samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and total petroleum hydrocarbons as diesel (TPHd) by modified EPA Method 8015, and benzene, toluene, ethylbenzene, xylenes (BTEX) and methyl tert-butyl ether (MTBE) by EPA Method 8020. Samples were also analyzed for the bioparameters nitrate, sulfate and alkalinity. The groundwater analytical results are summarized in Tables 1 and 2. The analytical report is included as Attachment B.

Groundwater Flow Direction: Based on depth-to-water measurements collected during Cambria's July 21, 2000 site visit, groundwater beneath the site flows to the southwest with a gradient of 0.002 ft/ft (Figure 2). Depth-to-water and groundwater elevation data are presented in Table 1.

Oakland, CA
San Ramon, CA
Sonoma, CA
Portland, OR

Cambria Environmental Technology, Inc.

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

HYDROCARBON DISTRIBUTION IN GROUNDWATER

Residual hydrocarbons appear to be located primarily near source area well MW-1 and well MW-2, which is located immediately downgradient of the former source area. As discussed below, hydrocarbon concentrations exhibit a clear decreasing trend in hydrocarbon-bearing wells MW-1 and MW-2. No hydrocarbons have been detected above laboratory reporting limits in downgradient well MW-3, except for low concentrations of TPHd (64 ug/l this quarter). No MTBE has been detected in groundwater samples collected from site monitoring wells. The hydrocarbon plume appears stable and has been defined by monitoring wells MW-1, MW-2, and MW-3.

BIOREMEDIATION EVALUATION

To assess whether or not intrinsic bioremediation is occurring at the site, Cambria evaluated available hydrocarbon and bioparameter data for the site. Table A below presents a summary of the chemical reactions and relationships that indicate whether hydrocarbon biodegradation is occurring. Historical analytical results for bioparameters and hydrocarbons are presented in Tables 1 and 2.

Hydrocarbon Concentration Trends: The best indicator of biodegradation within groundwater at a given site is an observed decreasing trend for dissolved hydrocarbon concentrations. At this site, all three wells exhibit decreasing trends. Historical data on Table 1 clearly demonstrates that for source area well MW-1, TPHg, TPHd, benzene, ethylbenzene and xylenes have decreased significantly over the nine years of groundwater monitoring.

Aerobic Biodegradation: Bioparameter data are secondary indicators of biodegradation and biodegradation potential. Other than decreasing hydrocarbon concentrations, the best indicator of aerobic biodegradation, or the potential for aerobic biodegradation, is dissolved oxygen (DO) concentrations. Because hydrocarbon degradation utilizes DO, an inverse relationship between hydrocarbon and DO concentrations typically indicates that hydrocarbon degradation is occurring. Because DO concentration measurements can vary greatly depending on instrumentation, technique, and temperature, it is important to evaluate data within a given monitoring event as well as data collected over several monitoring events. Well construction and location is also important since wells within permeable materials (such as naturally-occurring units or former excavation areas) may receive more significant groundwater recharge, which could replenish DO concentrations. While the relationship between DO and hydrocarbon concentrations at this site do not exhibit a clear inverse relationship, the magnitude of DO concentrations during some monitoring events suggest that sufficient DO is present to allow biodegradation to occur. Alkalinity, another indicator of aerobic degradation, suggests that biodegradation is occurring. At this site we observe a clear direct relationship between alkalinity and hydrocarbon concentrations.

Anaerobic Biodegradation: Indicative of anaerobic degradation, nitrate and sulfate concentrations exhibit an inverse relationship with hydrocarbon concentrations in site wells. The direct relationship observed between ferrous iron and hydrocarbon concentrations also suggests that anaerobic degradation is occurring.

Table A - Bioparameter Analysis

Bio-parameter	Description of chemical processes and implications of relationship between hydrocarbon and bioparameter concentrations.	Relationship indicating active bio-degradation	Observed Relationship
ORP	The oxidation-reduction potential (ORP) of groundwater is a measure of electron activity and is an indicator of the relative tendency of a solute species to gain or lose electrons. The ORP of groundwater generally ranges from -400 millivolts (mV) to +800 mV. Under oxidizing conditions the ORP of groundwater is positive, while under reducing conditions the ORP is usually negative. Reducing conditions (negative ORP) suggests that anaerobic biodegradation is occurring. Generally, the ORP of groundwater inside a hydrocarbon plume should be somewhat less than that measured outside the plume.	inverse	inverse
Nitrate	After DO has been depleted in the groundwater, nitrate may be used as an electron acceptor for anaerobic biodegradation. In this denitrification process, nitrate is reduced to nitrite. Reduced nitrate concentrations in the source area compared to the clean area suggests that anaerobic biodegradation is occurring.	inverse	inverse
Sulfate	After DO and nitrate have been depleted in the groundwater, sulfate may be used as an electron acceptor for anaerobic biodegradation. If sulfate concentrations vary inversely with hydrocarbon concentrations, anaerobic biodegradation of fuel hydrocarbons is probably occurring.	inverse	inverse
Ferrous Iron	In some cases ferric iron acts as an electron acceptor during anaerobic biodegradation of petroleum hydrocarbons. In this process, ferric iron is reduced to ferrous iron, which may be soluble in water. Therefore, if the ferrous iron concentrations vary directly with hydrocarbon concentration, anaerobic biodegradation may be occurring.	direct	direct

Alkalinity	The total alkalinity of groundwater indicates the groundwater's ability to neutralize acid. High alkalinity (high pH) conditions occur when groundwater contains elevated hydroxides, carbonates, and bicarbonates of elements such as calcium, magnesium, sodium, potassium, or ammonia. Since these chemical species are created by the respiration of microorganisms, high alkalinity is an indicator of biological activity. However, these chemical species may also result from the dissolution of rock (especially carbonates) and the transfer of carbon dioxide from the atmosphere. Alkalinity also buffers groundwater pH against acid generation by both aerobic and anaerobic biodegradation processes. Higher alkalinity in the source area as compared to clean areas suggests that aerobic biodegradation is occurring.	direct	direct
Dissolved Oxygen	During aerobic biodegradation, DO levels are reduced as aerobic respiration occurs. DO is the most thermodynamically favored electron acceptor used in aerobic biodegradation of petroleum hydrocarbons. Active aerobic biodegradation of BTEX compounds requires at least 1 ppm DO in groundwater and DO concentrations can be as high as 8 to 13 mg/L in oxygen-saturated groundwater that is free of hydrocarbons. Observed inverse relationships between DO and hydrocarbon concentrations indicate the occurrence of aerobic degradation, provided that at least 1 to 2 mg/L of DO is present in groundwater.	inverse	inconclusive

Bioremediation Conclusions

The decreasing trend for hydrocarbon concentrations and the relationship between bioparameter measurements and hydrocarbon concentrations indicates that aerobic and anaerobic degradation is occurring in site groundwater.

LOW-RISK GROUND WATER CASE CRITERIA

Presented below is a summary of site characteristics that classify this site as a low-risk ground water case, as established by the RWQCB.

Source Removal: The former 3,000-gallon and 1,000-gallon USTs and petroleum-impacted soil were removed from the site in 1988 by Kaprealian Engineering, Inc. (KEI) of Benecia, California. KEI excavated the soil surrounding the former USTs to a depth of 18 ft bgs.

Horizontal and Vertical Characterization of Hydrocarbons in Soil: The horizontal extent of petroleum impacted soil has been defined by previous subsurface investigations. On August 1, 1991, Terratech installed monitoring well MW-1, approximately five feet west of the former UST excavation. One soil sample collected at the capillary fringe indicated the presence of petroleum hydrocarbons,

although no benzene or toluene was detected in this sample. On November 22, 1995, Geomatrix of San Francisco, California (Geomatrix) conducted a subsurface investigation to characterize the petroleum-impacted groundwater. Geomatrix advanced four borings (B1 through B4) and collected grab groundwater samples. In addition, Geomatrix advanced four soil borings (B5 through B8) on February 19, 1997, to collect grab groundwater samples down-gradient of the former USTs along Clawiter Road. Geomatrix soil and groundwater analytical results are presented as Attachment C.

Extent of Hydrocarbons in Groundwater: On August 18, 1999, Cambria installed two monitoring wells (MW-2 and MW-3) to further assess the lateral extent of hydrocarbons in groundwater in response to the ACHCSA letter dated February 22, 1999, which requested additional offsite permanent monitoring wells. Cambria conducted four quarterly groundwater monitoring events of the three wells (MW-1 through MW-3). The plume has been defined by wells MW-1, MW-2 and MW-3. The historical groundwater analytical data is presented on Table 1.

Sensitive Receptors: Based on information collected from the Alameda County Zone 7 Water Agency and presented in Geomatrix's June 1, 1997 Groundwater Investigation Results and Evaluation of Closure Criteria, the nearest water supply well is a domestic well located west of the site at 23145 Clawiter Road. Since this well depth is 130 ft bgs, it is not likely to be screened in the shallow water-bearing units and is not likely to be impacted by the low concentrations detected in shallow groundwater at the site. The nearest surface water bodies are more than one mile from the site based on the USGS San Leandro Quadrangle, California, and the Hayward Quadrangle, California 7.5 Minute Series topographic maps.

Risk to Human Health: The site conditions do not present a significant risk to human health. Residual hydrocarbons in soil and groundwater are located at depths (13-16 ft bgs) where human exposure is unlikely. In addition, the hydrocarbon concentrations would not likely pose a risk to site occupants via hydrocarbon volatilization.

Risk to Environment: No surface water bodies have been identified surrounding the site and the site is located in an urban environment of primarily commercial uses.

REQUEST FOR REGULATORY CASE CLOSURE

Cambria respectfully requests regulatory case closure of this site based upon the following:

- The hydrocarbon source has been removed.
- The plume is stable with concentrations exhibiting a clear decreasing trend. – is irrigation well not a concern then?
- Aerobic and anaerobic biodegradation is occurring at the site.
- No MTBE has ever been detected at the site.
- No benzene has been detected in downgradient monitoring wells MW-2 and MW-3.
- The site does not appear to pose a risk to human health or the environment.

Based on these findings, Cambria believes that no additional investigation, remediation, or sampling is warranted. We request that case closure be granted for this site.

ANTICIPATED FUTURE ACTIVITIES

Groundwater Disposal and Well Abandonment: If our request below for case closure is granted, our final project activities would be disposal of purged groundwater and well abandonment in accordance with regulatory requirements.

CLOSING

We appreciate the opportunity to provide environmental services on behalf of Mr. Ken Clark. If you have any questions or comments, please call John Riggi at (510) 420-3340.

Sincerely,
Cambria Environmental Technology, Inc.

John A. Riggi
Project Geologist

Bob Clark-Riddell, P.E.
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
ROBERT G. CLARK-RIDDELL
No. C 049629
Exp. Sept 2002
CIVIL
STATE OF CALIFORNIA

ATTACHMENTS

Figure 1 - Vicinity Map
Figure 2 - Groundwater Contour Map

Table 1 - Groundwater Analytical Data
Table 2 - Bioparameter Concentrations in Groundwater

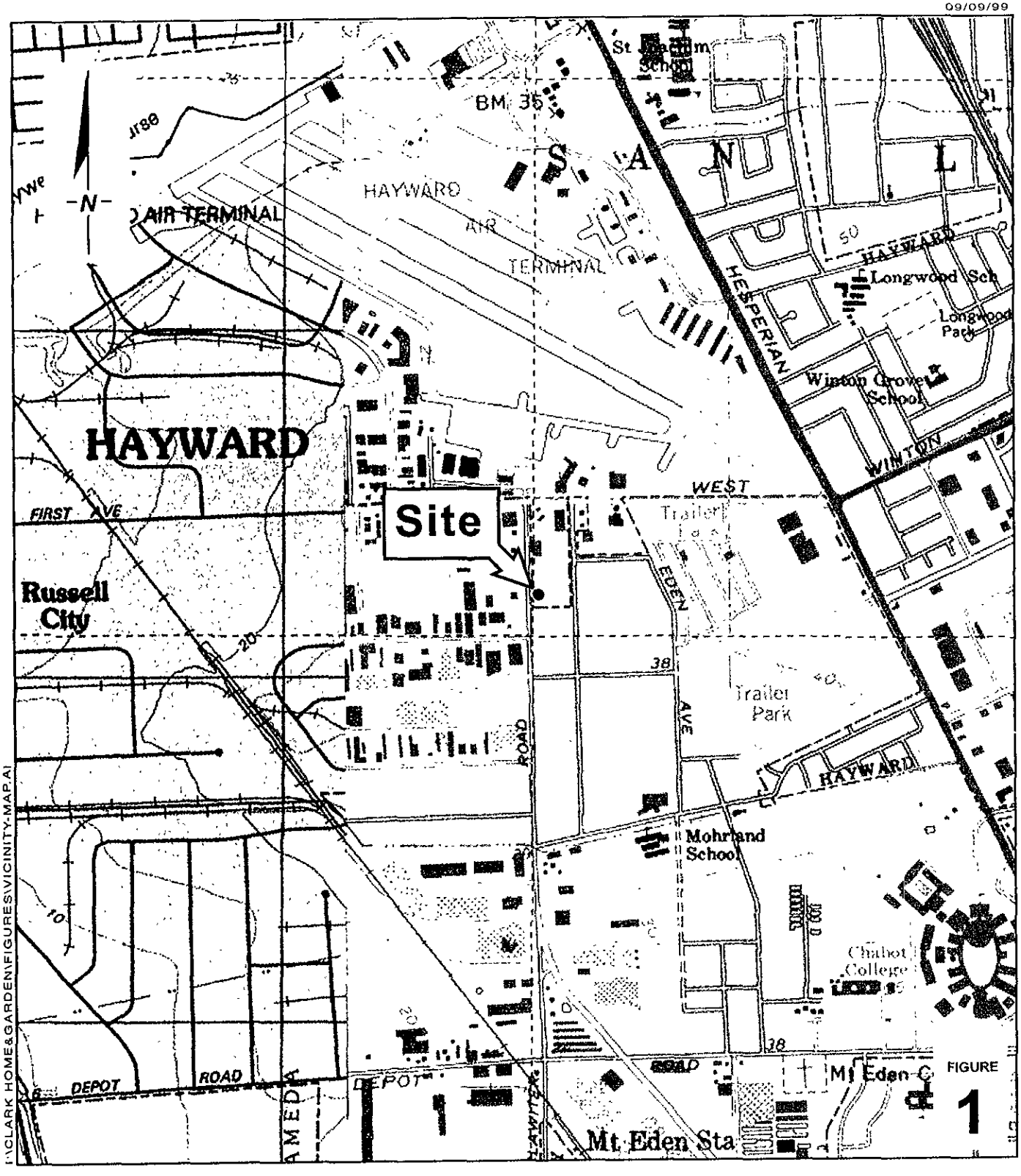
Attachment A - Field Data Sheets
Attachment B - Laboratory Analytical Report
Attachment C - Geomatrix Soil and Groundwater Analytical Results

cc: Ms. Eva Chu, Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, 2nd Floor, Alameda, California 94502

Mr. and Mrs. Bob and Shirley Price, 537 Hidden Valley Road, Grants Pass, Oregon 97527

H:\Clarks H&G\QM\3QMR00andClosure Request.wpd

09/09/99



F:\CLARK HOME&GARDEN\FIGURES\VICINITY-MAP.AI

FIGURE 1

Clark's Home and Garden

23040 Clawiter Road

Hayward, California

CAMBRIA

Vicinity Map

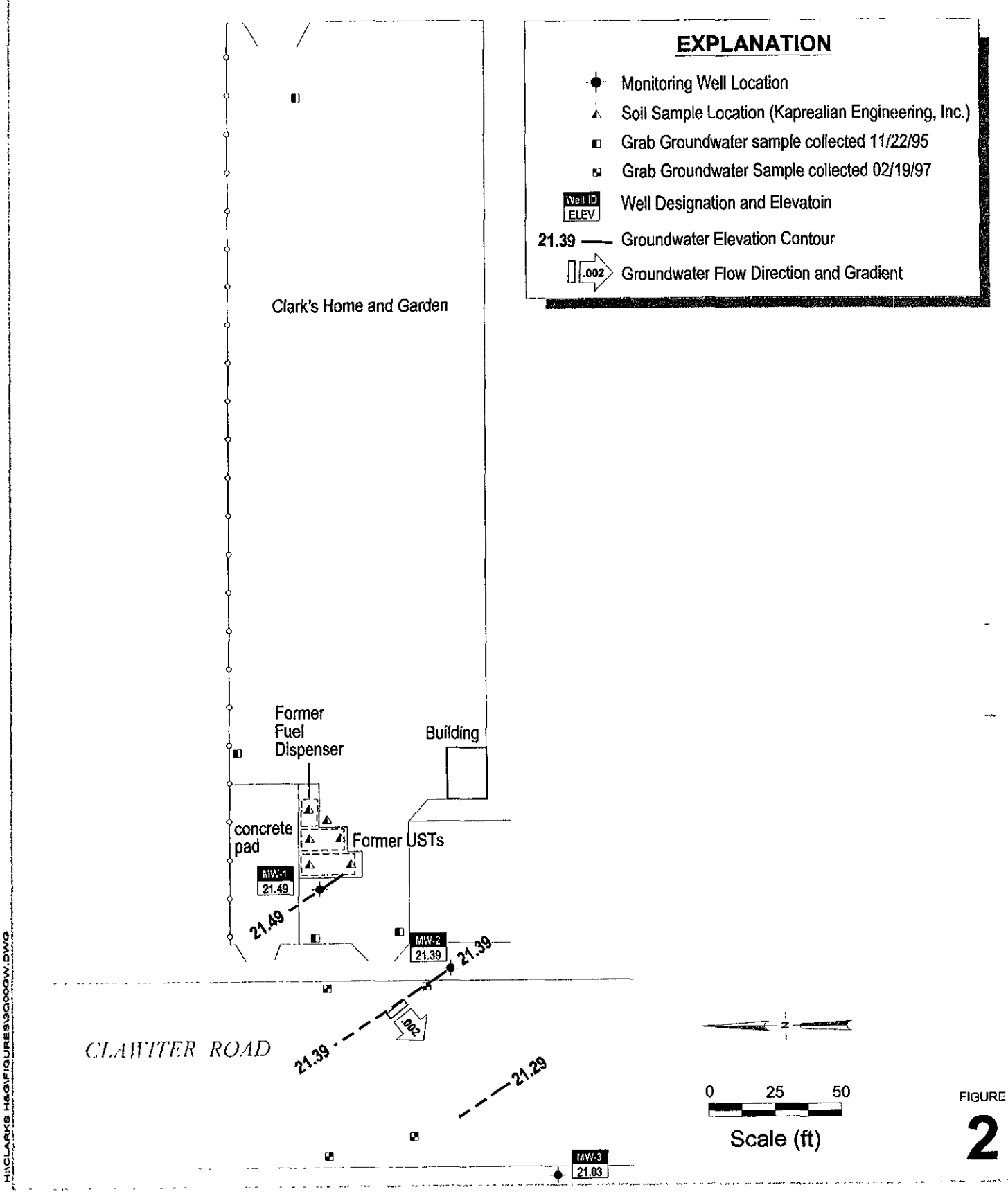


FIGURE
2

H:\CLARKS H&G\FIGURES\2Q00GW.DWG

Clark's Home and Garden

23040 Clawiter Road

Hayward, California

CAMBRIA

Groundwater Contour Map

July 21, 2000

CAMBRIA

Table 1. Groundwater Analytical Data - Clark's Home and Garden, 23040 Clawiter Road, Hayward, California

Well ID *TOC (ft)*	Date	Depth to Groundwater (ft)	Groundwater Elevation (ft*)	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
				<----------	----------	----------	(µg/L) ----------	----------	----------	---------->
MW-1	8/7/91	--	--	5,900	7,100	45	<25	130	520	--
35.30	9/5/91	--	--	47,000	2,800	<50	<50	230	660	--
	10/15/91	--	--	24,000	13,000	<50	<50	<50	390	--
	1/7/92	--	--	23,000	9,000	<50	<50	270	800	--
	4/8/92	--	--	8,100	3,500	19	<5	350	210	--
	7/7/92	--	--	7,000	6,300	<5	<5	190	170	--
	11/23/93	--	--	2,400	1,600	1.5	3.7	41	24	--
	1/31/94	--	--	3,900	1,900	1.9	4.2	56	49	--
	4/11/94	--	--	2,200	3,000	1.2	4.6	11	11	--
	7/27/94	--	--	6,200	4,400	<1	<1	50	74	--
	10/31/94	--	--	1,700	1,800	2.1	4.9	20	42	--
	10/9/95	--	--	870	1,300	<0.5	<0.5	12	10.4	--
	1/17/96	--	--	1,800	1,800	10	<5	16	19.8	--
	4/25/96	--	--	1,700	1,500	11	5.7	26	25	--
	2/19/97	--	--	2,800	430	9	6	33	50	--
	10/15/99	14.45	20.85	1,000[a]	1,400	3.3	5	4.6	6.7	<5.0
	1/25/00	14.21	21.09	2,200[a,b]	1,400[b,d,g]	3.3	1.7	4.6	7.4	<5.0
	4/27/00	12.80	22.50	960[a]	820[d,e]	3.5	3.2	7.7	25	<5.0
	7/21/00	**13.81**	**21.49**	**1700[c,j]**	**950[d,e]**	**4.0**	**5.1**	**7.6**	**7.5**	**<5.0**
MW-2	10/15/99	13.86	20.76	4300[g,j]	3,100	<1	6.7	11	11	<5.0
34.62	1/25/00	13.61	21.01	2,300[b,g,h]	2,900[b,d,g]	<0.5	2.3	2.2	2	<5.0
	4/27/00	12.26	22.36	730[b,j]	1,400[b,f]	<0.5	0.86	0.71	0.77	<5.0
	7/21/00	**13.23**	**21.39**	**610[c,j]**	**370[d]**	**<0.5**	**1.7**	**1.2**	**1.4**	**<5.0**
MW-3	10/15/99	14.88	20.42	<50	99	<0.5	<0.5	<0.5	<0.5	<5.0
35.30	1/25/00	14.67	20.63	<50	98[g]	<0.5	<0.5	<0.5	<0.5	<5.0
	4/27/00	13.35	21.95	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/21/00	**14.27**	**21.03**	**<50**	**64[e]**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<5.0**

CAMBRIA

Table 1. Groundwater Analytical Data - Clark's Home and Garden, 23040 Clawiter Road, Hayward, California

Well ID	Date	Depth to Groundwater	Groundwater Elevation	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
TOC (ft)		(ft)	(ft*)	<----------	----------	----------	(µg/L)	----------	----------	---------->
TB	10/15/99	--	--	<50	--	<0.5	<0.5	<0.5	<0.5	<5.0

Abbreviations and Methods:

TPHg = total petroleum hydrocarbons as gasoline by modified EPA Method 8015
Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8020
MTBE = methyl tert-butyl ether by EPA Method 8020
µg/L = micrograms per liter
TOC = top of casing elevation
TB = trip blank
-- = not available, not analyzed, or does not apply

Notes:

Sampling prior to 1999 reported by Geomatrix.
a - unmodified or weakly modified gasoline is significant
b - lighter than water immiscible sheen is present
c - heavier gasoline range compounds are significant (aged gasoline?)
d - gasoline range compounds are significant
e - diesel range compounds are significant; no recognizable pattern
f - aged diesel? is significant
g - strongly aged gasoline or diesel range compounds are significant
j - no recognizable pattern

CAMBRIA

Table 2. Bioparameter Concentrations in Groundwater - Clark's Home and Garden, 23040 Clawiter Road, Hayward, California

Well ID	Date	ORP	Nitrate	Sulfate	Ferrous Iron	Alkalinity	DO	TPHg
		mV	◄		mg/l		►	µg/l
MW-1	1/25/00	-108	3	20	0.8	720	2.31	2,200
	4/27/00	114	7	36	<0.2	550	0.77	960
	7/21/00	**79**	**1**	**25**	**2.4**	**640**	**0.55**	**1,700**
MW-2	1/25/00	-130	20	42	0.3	520	0.31	2,300
	4/27/00	106	15	32	<0.2	410	1.29	730
	7/21/00	**--**	**10**	**52**	**1.0**	**440**	**1.08**	**610**
MW-3	1/25/00	-37	69	66	0.02	470	0.46	<50
	4/27/00	116	75	70	<0.2	430	1.35	<50
	7/21/00	**--**	**68**	**84**	**<0.2**	**440**	**0.65**	**<50**

Abbreviations:

ORP = oxidation-reduction potential
mV = millivolts
mg/L = milligrams per liter
µg/L = micrograms per liter
DO = dissolved oxygen
TPHg = total petroleum hydrocarbons as gasoline by modified EPA Method 8015
-- = not available, not analyzed, or does not apply

ATTACHMENT A

Field Data Sheets

CAMBRIA

WELL DEPTH MEASUREMENTS

Well ID	Time	Top of Screen	DTB	DTP	DTW	[redacted]	Casing Dia	Comments
MW-1	8:00	NA	23.48'	—	13.81		2"	
MW-2	8:07	NA	25.12'	—	13.23		2"	
MW-3	8:15	NA	29.25'		14.27		2"	

Project Name: **K. Clark's H+G**

Project Number: **189-1517**

Measured By: **JO**

Date: **7/21/00**

CAMBRIA

WELL SAMPLING FORM

Project Name: **K. Clark's H+G**	Cambria Mgr: **JR**	Well ID: **MW-1**
Project Number: **189-1517**	Date: **7/21/00**	Well Yield: -------
Site Address: **23040 Clawiter Rd Hayward, CA**	Sampling Method: **Disposable bailer**	Well Diameter: **2 " pvc**
		Technician(s): **JO**
Initial Depth to Water: 13.81'	Total Well Depth: 23.48'	Water Column Height: 9.67'
Volume/ft: .16	1 Casing Volume: 1.55'	3 Casing Volumes: 4.65'
~~Purge/No Purge:~~		
Purging Device: BailER (Disp)	Did Well Dewater?: N	Total Gallons Purged: ~5 gal
Start Purge Time: 9:00	Stop Purge Time: 9:07	Total Time: 7 min

1 Casing Volume = Water column height x Volume/ ft.

Well Diam.	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp. C	pH	Cond. uS	Comments
9:03	2 gal	17.5	7.9	760	
05	3	17.3	7.7	820	
06	4.5	17.3	7.9	752	

ORP: 79 mV	DO: 0.55 mg/L	Fe: 2.4

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-1	**7/21/00**	9:15	**1 AMBER**	**NONE**	**TPHd,**	**8015 (modified)**
MW-1	**7/21/00**	9:15	**4 VOA**	**HCl**	**TPHg, BTEX, MTBE**	**8015/8020**
MW-1	7/21/00	9:15	1 Amber	—	Nit, Sul, Alk	—

CAMBRIA

WELL SAMPLING FORM

Project Name: **K. Clark's H+G**	Cambria Mgr: **JR**	Well ID: **MW-2**
Project Number: **189-1517**	Date: **7/21/00**	Well Yield: -------
Site Address: **23040 Clawiter Rd Hayward, CA**	Sampling Method: **Disposable bailer**	Well Diameter: **2 " pvc**
		Technician(s): **JO**
Initial Depth to Water: 13.23'	Total Well Depth: 25.12'	Water Column Height: 11.89'
Volume/ft: .16	1 Casing Volume: 1.90	3 Casing Volumes: 6.70
Purge/No Purge:		
Purging Device: Sub Pump	Did Well Dewater?: N	Total Gallons Purged: 8 gal
Start Purge Time: 9:35	Stop Purge Time: 9:40	Total Time: 5 min

1 Casing Volume = Water column height x Volume/ ft.

Well Diam.	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp. C	pH	Cond. uS	Comments
9:37	4 gal	17.6	7.98	507	
39	5	17.5	7.7	428	
40	6.5	17.5	8.0	446	

ORP: Broken meter	DO: 1.08 mg/L	Fe: 1.0

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-2	**7/21/00**	9:48	**1 AMBER**	**NONE**	**TPHd,**	**8015 (modified)**
MW-2	**7/21/00**	9:48	**4 VOA**	**HCl**	**TPHg, BTEX, MTBE**	**8015/8020**
MW-2	7/21/00	9:48	1 Amber	—	N.t, Sul, Alk	—

CAMBRIA

WELL SAMPLING FORM

Project Name: **K. Clark's H+G**	Cambria Mgr: **JR**	Well ID: **MW-3**
Project Number: **189-1517**	Date: **7/21/00**	Well Yield: -------
Site Address: **23040 Clawiter Rd Hayward, CA**	Sampling Method: **Disposable bailer**	Well Diameter: **2 " pvc**
		Technician(s): **JO**
Initial Depth to Water: 14.27	Total Well Depth: 29.25	Water Column Height: 14.98
Volume/ft: .16	1 Casing Volume: 2.40	3 Casing Volumes: 7.20
~~Purge/No Purge:~~		
Purging Device: S.S Pump	Did Well Dewater?: N	Total Gallons Purged: ~~8~~ 8 gal
Start Purge Time: 10:15	Stop Purge Time: 10:19	Total Time: ~~8~~ 4 min

1 Casing Volume = Water column height x Volume/ ft.

Well Diam	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp. C	pH	Cond. uS	Comments
10:17	5 gal	pH meter broken			
10:18	6				
10:19	7				

ORP: Probe mtr	DO: 0.65	Fe: 0.0

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-3	**7/21/00**	10:25	**1 AMBER**	**NONE**	**TPHd,**	**8015 (modified)**
MW-3	**7/21/00**	10:25	**4 VOA**	**HCl**	**TPHg, BTEX, MTBE**	**8015/8020**
MW-3	7/21/00	10:25	1 AMBER	—	Nitrate	—

D:\TEMPLATE\[FORM SHEET-DAWELL SAMP.WPD]
8SM 5/11/94

5 DRUMS
1 - soil
4 - H2O

ATTACHMENT B

Laboratory Analytical Report

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
http://www.mccampbell.com E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65th Street, Suite C Oakland, CA 94608	Client Project ID: #189-1517; Clark's H + G	Date Sampled: 07/21/2000
		Date Received: 07/21/2000
	Client Contact: John Riggi	Date Extracted: 07/21-07/24/2000
	Client P.O:	Date Analyzed: 07/21-07/24/2000

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with Methyl tert-Butyl Ether* & BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)+	MTBE	Benzene	Toluene	Ethylben-zene	Xylenes	% Recovery Surrogate
43472	MW-1	W	1700,b,j	ND	4.0	5.1	7.6	7.5	107
43473	MW-2	W	610,b,j	ND	ND	1.7	1.2	1.4	98
43474	MW-3	W	ND	ND	ND	ND	ND	ND	95
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	5.0	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.05	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, wipe samples in ug/wipe, soil and sludge samples in mg/kg, and all TCLP and SPLP extracts in ug/L

cluttered chromatogram; sample peak coelutes with surrogate peak

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~5 vol. % sediment; j) no recognizable pattern.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
http://www.mccampbell.com E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65th Street, Suite C Oakland, CA 94608	Client Project ID: #189-1517; Clark's H + G	Date Sampled: 07/21/2000
		Date Received: 07/21/2000
	Client Contact: John Riggi	Date Extracted: 07/21-07/28/2000
	Client P.O:	Date Analyzed: 07/21-07/28/2000

Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel *

EPA methods modified 8015, and 3550 or 3510; California RWQCB (SF Bay Region) method GCFID(3550) or GCFID(3510)

Lab ID	Client ID	Matrix	TPH(d)+	% Recovery Surrogate
43472	MW-1	W	950,d,b	100
43473	MW-2	W	370,d	98
43474	MW-3	W	64,b	99
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	
		S	1.0 mg/kg	

* water and vapor samples are reported in ug/L, wipe samples in ug/wipe, soil and sludge samples in mg/kg, and all TCLP / STLC / SPLP extracts in ug/L

cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) aged diesel? is significant); d) gasoline range compounds are significant; e) medium boiling point pattern that does not match diesel (?); f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~5 vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Ave. South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
http://www.mccampbell.com E-mail: main@mccampbell.com

QC REPORT

Date: 07/21/00-07/22/00 Matrix: Water

Extraction: N/A

Compound	Concentration: ug/L				%Recovery		RPD
	Sample	MS	MSD	Amount Spiked	MS	MSD	
SampleID: 72100					Instrument: GC-3		
Surrogate1	0.000	88.0	93.0	100.00	88	93	5.5
Xylenes	0.000	245.0	249.0	300.00	82	83	1.6
Ethyl Benzene	0.000	83.0	84.0	100.00	83	84	1.2
Toluene	0.000	85.0	88.0	100.00	85	88	3.5
Benzene	0.000	85.0	88.0	100.00	85	88	3.5
MTBE	0.000	96.0	94.0	100.00	96	94	2.1
GAS	0.000	822.9	780.4	1000.00	82	78	5.3
SampleID: 72000					Instrument: GC-2 A		
Surrogate1	0.000	101.0	102.0	100.00	101	102	1.0
TPH (diesel)	0.000	286.0	293.0	300.00	95	98	2.4
SampleID: 72100					Instrument: IR-1		
TRPH	0.000	28.1	27.5	23.70	119	116	2.2

$$\%\ \text{Recovery} = \frac{(MS - Sample)}{AmountSpiked} \cdot 100$$

$$\text{RPD} = \frac{(MS - MSD)}{(MS + MSD)} \cdot 2 \cdot 100$$

GeoAnalytical Laboratories, Inc.

1405 Kansas Avenue Modesto, CA 95351 Phone (209) 572-0900 Fax (209) 572-0916

CERTIFICATE OF ANALYSIS

Report # L204-02

Date: 7/31/00

McCampbell Analytical
110 2nd Avenue South
Pacheco CA 94553

Project: 21169

PO#

Date Rec'd: 7/22/00
Date Started: 7/24/00
Date Completed: 7/25/00

Date Sampled: 7/21/00
Time:
Sampler:

Sample ID	Lab ID	RL	Method	Analyte	Results	Units
MW-1	L36818	10	2320B	Total Alkalinity	640	mg/L
		1.0	300.0	Nitrate (NO3)	1	mg/L
		1.0	300.0	Sulfate	25	mg/L
MW-2	L36819	10	2320B	Total Alkalinity	440	mg/L
		1.0	300.0	Nitrate (NO3)	10	mg/L
		1.0	300.0	Sulfate	52	mg/L
MW-3	L36820	10	2320B	Total Alkalinity	440	mg/L
		1.0	300.0	Nitrate (NO3)	68	mg/L
		1.0	300.0	Sulfate	84	mg/L

Ramiro Salgado
Chemist

Certification # 1157

Donna Keller
Laboratory Director

GeoAnalytical Laboratories, Inc.

1405 Kansas Avenue Modesto, CA 95351 Phone (209) 572-0900 Fax (209) 572-0916

Report# L204-02

QC REPORT

McCampbell Analytical
110 2nd Avenue South
Pacheco CA 94553

Dates Analyzed 7/24/00-/7/25/00

Analyte	Batch #	Method	MS % Recovery	MSD % Recovery	RPD	Blank
Total Alkalinity	I06227	SM2320B	90.0	90.0	0.0	ND
Nitrate (NO3)	I06313	300.0	107.0	107.0	0.1	ND
Sulfate	I06320	300.0	83.4	82.0	1.7	ND

Ramiro Salgado
Chemist

Certification # 1157

Donna Keller
Laboratory Director

L204-02

QEO

McCAMPBELL ANALYTICAL INC.

110 2nd AVENUE SOUTH, #D7
PACHECO, CA 94553-5560
Telephone: (925) 798-1620 Fax: (925) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HOUR ☐ 48 HOUR ☒ 5 DAY ☐ ROUTINE

Report To: ELISA VENEGAS Bill To: MAI

Project #: 21169 Project Name: CAM

Project Location:

SAMPLE ID	LOCATION	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX: Water	Soil	Air	Sludge	Other	METHOD PRESERVED: Ice	HCl	HNO_3	Other	ANALYSIS REQUEST: Asbestos	BOD	Sulfide	Cyanide	Chlorine Residual RL<5 mg/L	Color (True Apparent)	DOC	TOC	Ammonia	TKN	Alkalinity	Turbidity	OTHER: Nitrate	Fish Bioassay	Flouride	Coliform	Chloride	General Minerals	SULFATE	COMMENTS
MW-1		7/21		1	poly	X					X					L36818								X		X						X	43472
MW-2		"		"	"	"					"					L36819								"		"						"	43473
MW-3		"		"	"	"					"					L36820								"		"						"	43474

	Date:	Time:	Received By:
Relinquished By: [illegible] VENEGAS	7/21		Fed Ex
Relinquished By:	Date:	Time:	Received By:
	7/22/02	2:15 pm	P Stalcup
Relinquished By:	Date:	Time:	Received By:

Remarks:

21169 zc182.doc

McCAMPBELL ANALYTICAL INC.

110 2nd AVENUE SOUTH, #D7
PACHECO, CA 94553
Telephone: (925) 798-1620 Fax: (925) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HOUR ☐ 48 HOUR ☒ 5 DAY

Report To: ~~Bob Schultz~~ John Riggi Bill To: → CAMBRIA
Company: Cambria Environmental Technology
1144 65th Street, Suite C
Oakland, CA 94608
Tele: (510) 420-0700 Fax: (510) 420-9170
Project #: 189-1517 Project Name: Clark's Htg
Project Location: Hayward, CA
Sampler Signature: [signature]

SAMPLE ID	LOCATION	Sampling Date	Sampling Time	# Containers	Type Containers	Matrix: Water	Soil	Air	Sludge	Other	Method Preserved: Ice	HCl	HNO_3	Other	BTEX & TPH as Gas (602/8020 + 8015)/ MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (5520 E&F/B&F)	Total Petroleum Hydrocarbons (418.1)	~~EPA 601/8010~~ N. Nitrates Sulfates Alkalinity	BTEX ONLY (EPA 602 / 8020)	EPA 608 / 8080	EPA 608 / 8080 PCB's ONLY	EPA 624 / 8240 / 8260	EPA 625 / 8270	PAH's / PNA's by EPA 625 / 8270 / 8310	CAM-17 Metals	LUFT 5 Metals	Lead (7240/7421/239.2/6010)	RCI	Other	Comments
MW-1		7/21/00	9:15	4	VOA	X					X	X			X																43472
MW-1			9:15	1	Amber											X															
MW-2			9:48	4	VOA							X			X																43473
MW-2			9:48	1	Amber											X															
MW-3			10:25	4	VOA							X			X																43474
MW-3			10:25	1	Amber											X															
MW-1			9:15	1	Amber													X													
MW-2			9:48	1	↓													↓													
MW-3			10:25	1	↓						↓							↓													

Relinquished By:	Date:	Time:	Received By:
[signature]	7/21	1:40	[signature]
[signature]	7/21	4:30	[signature]

Remarks:

ICE/t° ✓
GOOD CONDITION ✓
HEAD SPACE ABSENT ✓
PRESERVATION APPROPRIATE ✓
CONTAINERS ✓
VOAS | O&G | METALS | OTHER

ATTACHMENT C

Geomatrix Soil and Groundwater Analytical Results

GEOMATRIX

TABLE 3

SUMMARY OF GRAB GROUNDWATER ANALYTICAL RESULTS
22 NOVEMBER 1995 INVESTIGATION[1]

Clark's Home and Garden
23040 Clawiter Road
Hayward, California

Concentrations in micrograms per liter (µg/l) unless otherwise indicated.

Sample Name	Date	TPH[2] as Gasoline[3] (mg/l)[4]	TPH as Diesel[3] (mg/l)	TPH as Motor Oil[3] (mg/l)	Benzene[5]	Toluene[5]	Ethyl-benzene[5]	Total Xylenes[5]
B-1	11/22/95	9.2	51.0	0.84	18	15	80	8
B-2/B-12[6]	11/22/95	2.5/1.2	0.75/0.22	<0.2/<0.2	<0.5/<0.5	<0.5/<0.5	7.1/8.3	<0.5/<0.5
B-3	11/22/95	<0.05	<0.05	<0.2	<0.5	<0.5	<0.5	0.6
B-4	11/22/95	11.0	270.0	3.3	<1[7]	18	150	81

Notes:

1. Analyses conducted by Friedman & Bruya, Inc., of Seattle, Washington.
2. TPH = total petroleum hydrocarbon.
3. TPH as gasoline, diesel, and motor oil analyzed using modified EPA Method 8015 (silica gel cleanup performed on extractions prior to analysis for TPH as diesel and motor oil).
4. mg/l = milligrams per liter.
5. Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA Method 8020.
6. Duplicate sample result.
7. Sample was diluted by the laboratory and detection limit raised due to dilution.

GEOMATRIX

TABLE 4

SUMMARY OF GRAB GROUNDWATER ANALYTICAL RESULTS
19 FEBRUARY 1997 INVESTIGATION[1]

Clark's Home and Garden
23040 Clawiter Road
Hayward, California

Concentrations in micrograms per liter (µg/l) unless otherwise noted.

Sample Name	Sample Date	TPH as Diesel[2] (mg/l)	TPH as Gasoline (mg/l)	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
B-5	2/19/97	25[3]	4.7	2	5	37	9	<2[4]
B-5F[5]	2/19/97	0.55[3]	---[6]	---	---	---	---	---
B-6	2/19/97	1100[7]	8.6	4	13	90	10	<2[4]
B-6F[5]	2/19/97	180[7]	---	---	---	---	---	---
B-7	2/19/97	12[7]	3.4	2	5	3	8	<0.5
B-7 dup	2/19/97	2.1[7]	3.5	1.9	5.3	<0.5	11	<0.5
B-7F[5]	2/19/97	0.4[7,8]	---	---	---	---	---	---
B-8	2/19/97	7.6	6.3	4	8	10	16	<2[4]
B-8F[5]	2/19/97	0.36[7,8]	---	---	---	---	---	---
EB-1	2/19/97	<0.05	<0.05	<0.5	<0.05	<0.5	<0.5	<0.5
EB-1F[5]	2/19/97	5/0.17[9]	---	---	---	---	---	---

Notes:
1. Grab groundwater samples analyzed by Friedman & Bruya, Inc., of Seattle, Washington, for total petroleum hydrocarbons (TPH) as diesel and gasoline using modified Environmental Protection Agency (EPA) Method 8015; and for benzene, toluene, ethylbenzene, total xylenes, and methyl tertiary butyl ether (MTBE) using EPA Method 8020.
2. Grab groundwater sample extracts were passed through a silica gel column prior to TPH as diesel analysis.
3. Laboratory notes the pattern of peaks in the chromatogram is not indicative of diesel #2.
4. Detections limits raised due to dilution.
5. The sample was filtered with a 0.7-micron glass fiber filter.
6. --- indicates not analyzed.
7. Laboratory notes the pattern of peaks present is indicative of a mixture of petroleum products, a portion of which is indicative of diesel.
8. The sample was extracted after hold time had expired.
9. This sampe was re-analyzed to confirm results.